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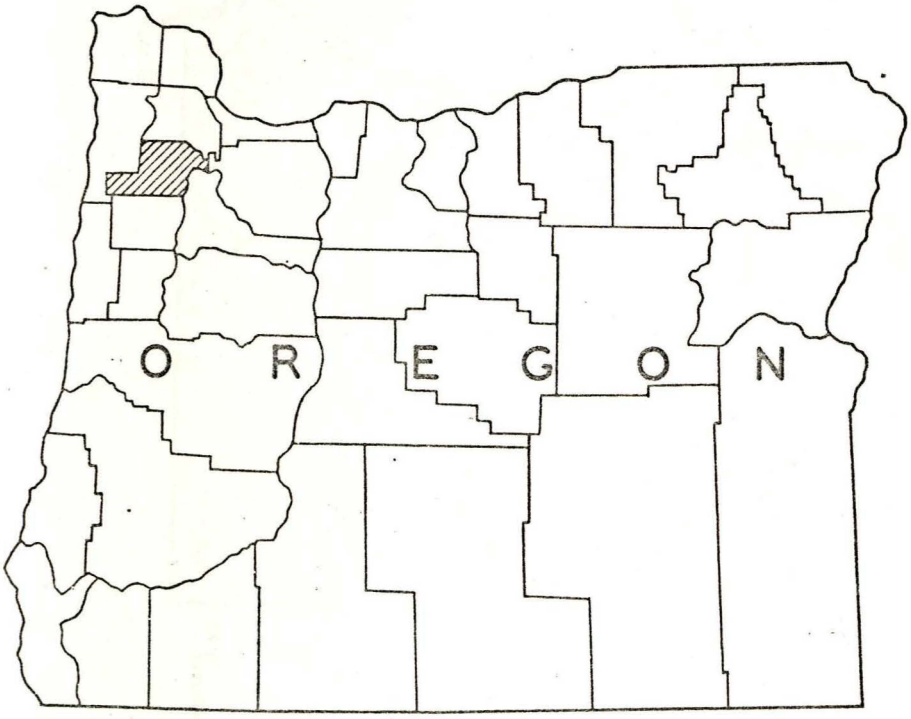
FOREST STATISTICS
FOR
YAMHILL COUNTY, OREGON

FROM THE FOREST SURVEY INVENTORY REVISED IN 1942

FOREST SURVEY REPORT NO. 91



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION
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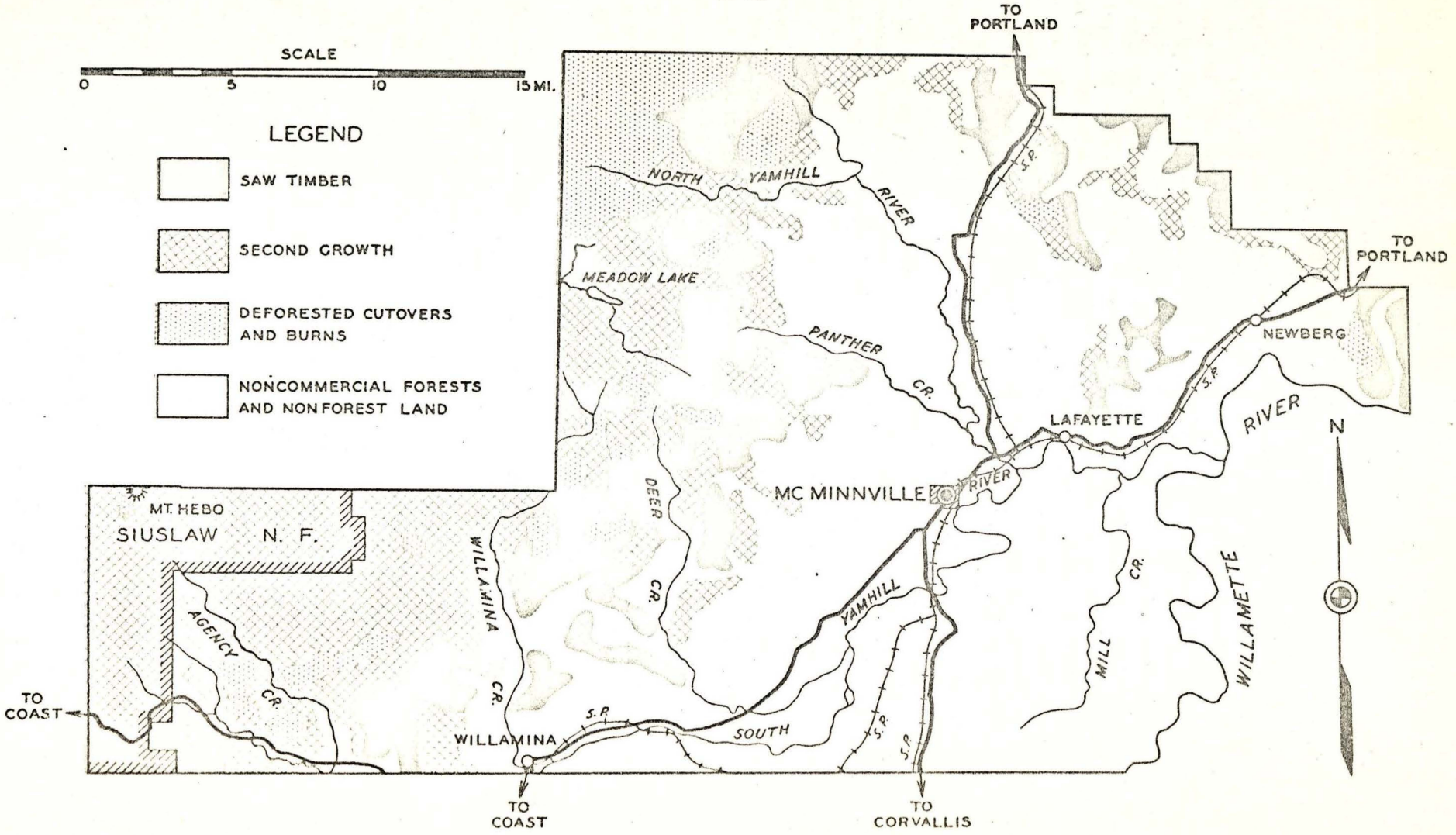
PORTLAND, OREGON OCTOBER 1, 1943

FIGURE I

OUTLINE MAP OF YAMHILL COUNTY, OREGON

1942



FOREWORD

The forest survey, a Nation-wide project, consists of a detailed investigation in five major parts of present and future forest resources: (1) An inventory of the country's existing forest resources in terms of areas occupied by forest-cover types and of timber volumes, by species, in board feet and cubic feet, and a study of conditions on cut-over and on burned forest lands; (2) a study of the depletion of the forests through cutting and through loss from fire, insects, disease, and other causes; (3) a determination of the current and potential growth on forest areas; (4) an investigation of present and prospective requirements of the United States for forest products; and (5) an analysis and correlation with other economic data of findings of these studies in order to make available basic facts and guiding principles necessary to plan for sound management and use of forest resources.

The forest survey of Oregon and Washington, an activity of the Pacific Northwest Forest and Range Experiment Station, was conducted in the Douglas-fir region during the period 1930-1933, inclusive.* In 1937, work of keeping the survey up to date was commenced in counties in which there had been a large amount of cutting depletion since the original survey. Field work of the original survey in Yamhill County was done in the summer of 1930. Three years later the data were made current through adjustment for depletion due to the Tillamook Fire and cutting during the interim. A statistical report, Forest Statistics for Yamhill County, Oregon, was issued in 1934. In the summer of 1942 a reinventory was made in which all changes in forest types and timber-volume data were noted in the field. Statistics resulting from this reinventory are given in this report which supersedes the one issued in 1934.

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*Oregon and Washington were divided for survey purposes into two regions, (1) Douglas-fir region, consisting of that part of both states west of the Cascade Range summit, and (2) ponderosa pine region, that part of both states east of the Cascade Range summit. A regional report which includes an interpretation of the forest survey data and analysis of the forest situation has been published for each of the two regions. Each region was divided into units--11 in the Douglas-fir region and 7 in the ponderosa pine region--for the purpose of more intensive analysis of data. It is planned to issue reports presenting findings for each unit.

FOREST STATISTICS FOR YAMHILL COUNTY, OREGON

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FOREST STATISTICS FOR YAMHILL COUNTY, OREGON

By F. L. Moravets[1]/

As a result of destructive fires, more than 100 years of white settlement with accompanying land-clearing operations, and several decades of logging, the area of old-growth timber in Yamhill County has been reduced to less than 1 percent of the total land area. Of these depleting agencies, fires have caused the greatest reduction. The fire record, as traced by the age pattern of the present immature timber stands, indicates that much of the western portion of the county was denuded by fires that occurred from 60 to 100 years ago, a period when fires swept vast areas of the coastal section of Oregon. Subsequent fires have covered smaller areas but in the aggregate have denuded a considerable acreage. Logging operations, which became fairly large scale during the last two or three decades, have been concentrated principally in the remnant stands that escaped the fires. Land clearing has been somewhat of a minor factor in the depletion of old-growth stands since it has been confined chiefly to the central and eastern portions of the county--areas that were for the most part intermittently or sparsely timbered.

Fortunately, most of the areas denuded by the earlier fires have restocked and these immature stands, together with those that have restocked cut-over lands, comprise some 159,000 acres of growing timber, quite evenly distributed among age classes from 10 to 100 years. An additional 40,000 acres of denuded forest land, of high productivity, represents another important asset, though idle at present. In the growing stands and the currently idle forest land, the county has a valuable resource which can, if well managed, form the basis for a permanent forest industry of considerable magnitude, an industry that will rank second only to agriculture in the county.

The following digest of the statistical data obtained in the original and revised inventories of the county's forests will present the current forest situation and should also disclose future possibilities for profitable forest management.

Physical Character of County

Situated in northwestern Oregon, Yamhill County lies in the lower Willamette Valley. It reaches from the Willamette River westward to the Coast Range, its western boundary following closely the crest of the range. Only a small area, along the northern half of the western boundary, lies on the Pacific slope. The extreme southwestern portion reaches within 9 miles of the Pacific Ocean.

1/ Field work of the revised inventory was done by George S. Meagher; data compilation was done by Meagher, W. H. Schwindel, Inga E. Fulkerson, and Dorothy L. Masche.

Current land use divides the county almost equally into two broad zones. The forest survey classified 221,525 acres, or roughly 48 percent, of the total land area of 458,255 acres as forest land and the remainder as nonforest land, nearly all of which is in agricultural use. Figure 1 shows in generalized pattern the two zones.

The major part of the forest zone lies in the western half of the county, occupying a segment of the mountainous terrain of the Coast Range. It is a region of broken but not extreme topography lying at elevations of 500 to 3,000 feet. From the crest of the range, rounded spurs fall away quite abruptly to end in foothills some 10 to 12 miles to the east. Several streams, tributaries of the Yamhill River, head near the crest to flow rapidly through deeply cut courses until the valley floor is reached. In this part of the forest zone, fairly large unbroken bodies of forest cover are the rule; only in the extreme northwestern corner of the county, where the Tillamook Fire of 1933 and Saddle Mountain Fire of 1939 swept through, is there an appreciable acreage of denuded land. In the foothills, near the lower boundary of the zone, the forest cover is broken by stringers of cleared land in agricultural use that extend short distances up the narrow valleys of the several streams. Also, there are a few small cleared areas on the lower benches, chiefly in orchards.

The remainder of the forest zone lies in the northeastern quarter of the county and consists of a fragmentary timber cover on the upper slopes and crests of a low mountainous spur, the Chehalem Mountains. Elevations here range from 300 to 1,200 feet. Although some of the slopes are too steep for farming, numerous areas in agricultural use, chiefly orchards, lie on the more gentle slopes and across the rounded crests to break up the continuity of the forest cover.

Agricultural Zone

The low-lying central and southeastern portions of the county comprise the agricultural zone. It consists of the narrow alluvial flood plains along the Yamhill and Willamette Rivers, broad valley terraces, and the lower slopes leading to the Coast Range and mountainous spurs in the northeastern portion. The Eola Hills, a low range extending northward into the southeastern portion of the county, lie within the zone, their slopes covered with a patchwork of cultivated fields, orchards, and small bodies of oak woodland or conifer timber. Elsewhere in the zone there are small remnant bodies of oak and Douglas-fir, many of which border the stream courses.

The alluvial flood plains are the most fertile and are intensively tilled, largely as truck gardens; the valley terraces, which comprise the bulk of the zone, are utilized for grain and forage crops; and the sloping hill lands are principally in walnut, filbert, and prune orchards. Dairying is also an important agricultural activity.

The forest survey found a total of 233,600 acres in agricultural use, either as cropland or pasture. Stump land that was a part of a farm unit and grazed by livestock was included in the agricultural acreage.

Agriculture is the county's leading industry. The Bureau of the Census report for 1940 showed 34 percent of the workers directly employed in agriculture. A large number of workers are also employed in plants processing farm products and in agencies servicing the farm population.

Character of the Forests

Fires, that occurred in the past century and a half, have constituted the major influence in determining the character of the county's present forest cover; logging has had a more minor role. Table 1, which gives the area of each forest-cover type, as mapped by the survey in the reinventory, lists 15 individual types of which 8 are conifer timber, 3 hardwood timber, and 4 denuded forest land. Only two--types 6 and 7--are old-growth timber. These two types, whose combined area, 4,290 acres, is less than 2 percent of the total forest-land acreage, are the only ones that have escaped the influence of fire or logging. Of the aggregate area of the 6 immature conifer timber types of 159,325 acres, stands on 142,390 acres, or 90 percent, have restocked burned-over land and those on the remaining 10 percent have restocked cut-over land. The hardwood types are found almost wholly in the agricultural zone where logging and land-clearing operations removed the virgin stands. Approximately 37 percent of the 39,880 acres of denuded forest land was deforested by fire and a considerable part of the remainder, which is cut-over land, has been kept in a deforested condition through fires that have followed the original slashing fire. Table 2 groups the individual types into generalized types and also segregates the immature conifer stands, less than saw-timber size, by origin.

One of the results of the survey is a 1-inch-to-the-mile forest type map of the county which shows in detail the individual forest types as mapped in the field. Immature timber types are shown by age class, degree of stocking, and origin--whether they have restocked burned-over or cut-over land.2/

Conifers

Physical factors that determine the character of the forest cover of a region--climate, soil, topography, and others--are favorable over practically all of Yamhill County for the growth of conifers. Although two hardwoods--red alder and bigleaf maple--occur in nearly all parts of the county, their occurrence is usually as understory trees in conifer stands. A total of 163,615 acres, or 74 percent of the forest land, is now stocked with conifer stands; also, all of the deforested acreage is conifer site.

Of the conifers Douglas-fir, in particular, finds here a most favorable site, and this species comprises 60 percent or more of the stand on all but 700 acres. Throughout much of the forest zone, it forms pure stands. In the mixed stands western hemlock, western redcedar, and grand fir are its most common associates; Sitka spruce is a minor associate over a small area.

2/ For information on this map or the 1/4-inch-to-the-mile lithographed state type maps covering Oregon and Washington, address Director, Pacific Northwest Forest and Range Experiment Station, 423 U. S. Court House, Portland, Oregon.

Table 1.--Area, in acres, of all forest cover types, by ownership class
Data corrected to October 1, 1942

Type No.	Type	Private	State[1/] available	County	Municipal	Indian	Federal, available			Total
							Revested land grant	Public domain	National forest	
	Woodland									
4	Oak	2,765								2,765
	Douglas-fir									
6	Large old growth	1,685		490	30		1,530		215	3,950
7	Small old growth	120		45			175			340
8	Large second growth	36,800	40	2,470	1,165	235	6,695		1,135	48,540
9	Small second growth	51,720	145	3,170	3,670	260	6,215	175	20,300	85,655
10	Seedlings and saplings	16,945		1,005	305	50	2,000	90	3,955	24,350
	Western hemlock									
15	Small	230			140		150			520
	Fir-mountain hemlock									
24	Small	30					80			110
	Grand fir									
30	Small	150								150
	Hardwood									
31.5	Large	9,435		10					1,070	10,515
31	Small	4,410			25		50		365	4,850
	Nonrestocked cut-over									
35	Cut prior to 1920	1,060								1,060
35A	Cut from 1920-29, incl.	7,095		1,840	5		290			9,230
36	Recent cut-over, since 1930	10,935		1,030	130	10	2,490		30	14,625
37	Deforested burn	8,695		2,045	585	30	2,560	305	645	14,865
	Total forest types	152,075	185	12,105	6,055	585	22,235	570	27,715	221,525
	Nonforest land									
3	Cultivated	232,415	275	210	60	310	120	200	10	233,600
2	Other	3,125					5			3,130
	Total	387,615	460	12,315	6,115	895	22,360	770	27,725	458,255

1/ Includes 40 acres of type 8 in a state park, reserved from cutting.

Table 2. - Area, in acres, of generalized forest types, by ownership class
Data corrected to October 1, 1942

Type definition	Private	State [1] available	County	Municipal	Indian	Federal, available: Revested land grant	Federal, available: Public domain	Federal, available: National forest	Total
Conifer saw timber Types 6, 7, and 8	38,605	40	3,005	1,195	235	8,400		1,350	52,830
Conifer second growth Types 9, 15, and 30									
On cut-over areas	7,855	65	1,475	220	30	335			9,980
On old burns	44,245	80	1,695	3,590	230	6,030	175	20,300	76,345
Total	52,100	145	3,170	3,810	260	6,365	175	20,300	86,325
Conifer seedlings and saplings Types 10 and 24									
On cut-over areas	4,865		690	75	5	325			5,960
On old burns	12,110		315	230	45	1,755	90	3,955	18,500
Total	16,975		1,005	305	50	2,080	90	3,955	24,460
Recent cut-over areas Type 36	10,935		1,030	130	10	2,490		30	14,625
Nonrestocked cut-over and burned-over areas Types 35, 35A, and 37	16,850		3,885	590	30	2,850	305	645	25,155
Hardwoods Types 31 and 31.5	13,845		10	25		50		1,435	15,365
Noncommercial areas Type 4	2,765								2,765
Total forest types	152,075	185	12,105	6,055	585	22,235	570	27,715	221,525
Nonforest land Types 2 and 3	235,540	275	210	60	310	125	200	10	236,730
Total	387,615	460	12,315	6,115	895	22,360	770	27,725	458,255

1/ Includes 40 acres of conifer saw timber in a State park, reserved from cutting.

Stands of large old-growth Douglas-fir, the prevailing virgin type in the county before the fires and logging operations, now are found on less than 4,000 acres, this remaining acreage being in some 20 scattered bodies from 50 to 800 acres. Although a few of the bodies are isolated islands in large tracts of immature timber, most of them will probably be logged in the very near future. Stands of small old-growth Douglas-fir remain on but a few hundred acres.

Some 48,000 acres of large second-growth Douglas-fir now contains the bulk of the remaining saw-timber volume. These stands, which range from 60 to 150 years and average about 90 years old, cover fairly broad areas on the lower slopes of the Coast Range and small areas on the upper slopes and crests of the mountain spurs in the northeastern portion of the county. A few of these stands stock the earlier cut-over lands but the bulk of them are on lands burned over by the early fires; many contain large scattered old-growth trees which escaped the fire. Immature trees in these stands are generally sound, even-aged and still thriftily growing; most of them are at the age of maximum volume increment. The average tree is from 22 to 26 inches in diameter, breast height, and contains about six 16-foot merchantable sawlogs. It is this class of timber that is now furnishing the bulk of the volume of sawlogs produced in the county.

More than half of the total conifer acreage is stocked with small second-growth fir pole-size timber from 6 to 20 inches, d.b.h. The 85,000 acres of this type is concentrated principally in two large bodies. One, in the southwestern portion of the county in the upper drainage of south Yamhill River, is comprised of numerous pole stands of varying age from 30 to 60 years intermingled with smaller stands of fir seedlings and saplings. This pattern of many age classes has resulted from the recurring fires that swept this area. Red alder forms from 20 to 40 percent of the stand on a considerable portion of this area. The second large body of this type is in the vicinity of Meadow Lake. Here, the stands are chiefly of one age--60 years.

The seedling and sapling fir stands, which have restocked 24,000 acres, occur chiefly as relatively small bodies, most of them intermingled with pole stands of fir. In table 3, which segregates the seedling, sapling, and pole-sized conifer stands by age class and degree of stocking, it is seen that on more than three-fifths of the total acreage of these types the stands are of good stocking (70 to 100 percent) and on the bulk of the remainder they are of medium stocking (40 to 69 percent). Since red alder was included in the stocking on part of the acreage, these figures give a slightly too optimistic viewpoint of the fir stands. This table also shows the fairly uniform distribution of the immature stands among the various age classes.

Hardwoods

With the exception of small areas of red alder in the upper drainage of the Nestucca River, the hardwood types are confined to the agricultural zone. Here, narrow bands of mixed stands of bigleaf maple, red alder, and

Table 3. - Area, in acres, of certain immature conifer forest types, by age class and degree of stocking
Data corrected to October 1, 1942

Age class (years)	Degree of stocking	Type number and name: 10 Douglas-fir seedlings and saplings	9 Douglas-fir small second growth	15 Western hemlock small second growth	24 Fir-mountain hemlock second growth	30 Grand fir second growth	Total
10	Good	1,235					1,235
	Medium	5,725					5,725
	Poor	4,400					4,400
	Total	11,360					11,360
20	Good	1,965	2,050				4,015
	Medium	6,220	475				6,695
	Poor	3,815					3,815
	Total	12,000	2,525				14,525
30	Good	535	14,380				14,915
	Medium	425	5,245		110		5,780
	Poor						
	Total	960	19,625		110		20,695
40	Good	30	2,310				2,340
	Medium		3,085				3,085
	Poor		905				905
	Total	30	6,300				6,330
50	Good		19,090				19,090
	Medium		6,175				6,175
	Poor		2,380				2,380
	Total		27,645				27,645
60	Good		19,880				19,880
	Medium		6,050				6,050
	Poor		70	220			290
	Total		26,000	220			26,220
70	Good		150				150
	Medium		955				955
	Poor		150			150	300
	Total		1,255			150	1,405
80	Good		285				285
	Medium		1,390				1,390
	Poor		630	300			930
	Total		2,305	300			2,605
Total all ages	Good	3,765	58,145				61,910
	Medium	12,370	23,375		110		35,855
	Poor	8,215	4,135	520		150	13,020
	Total	24,350	85,655	520	110	150	110,785

northern black cottonwood border the streams. The mixed stands occasionally include Oregon ash, although this species most commonly forms pure stands on wet bottom lands. Oregon oak is found over limited areas on the slopes of the foothills; on the better sites this species is of merchantable sawlog quality; on poorer sites it is a scrubby tree suitable only for fuelwood. About 3,000 acres was classified as oak woodland, type 4.

A little more than two-thirds of the 15,000 acres of hardwood types is stocked with trees of merchantable size and quality, the volume per acre averaging about 3,000 board feet. The remainder of the acreage is stocked with immature stands.

Deforested Lands

Forest land currently in a nonstocked condition is of three categories--old cut-over areas clear cut prior to 1930, recent cut-over areas clear cut during the period 1930-42, and areas deforested by fire. The total of 40,000 acres of these lands represents 18 percent of the county's forest land acreage.

The 10,000 acres of nonrestocked old cut-over land is almost wholly in one body in the extreme northwestern part of the county. This area was logged from 1921 to 1930, was burned over by the Tillamook Fire of 1933, and then reburned by the Saddle Mountain Fire of 1939. Natural regeneration of most of the area is doubtful because of the absence of seed trees.

Recent cut-over land, which totals about 15,000 acres, need not become a problem as this acreage is comprised of a large number of small tracts which should restock naturally provided fire is kept from them. It is probable that much of the acreage logged during the early 1930's is already restocked.

The acreage of deforested burn, near 15,000 acres, consists of some 7,000 acres burned-over by the Tillamook and Saddle Mountain Fires and a number of old burns in the South Yamhill River drainage. These old burns, lying chiefly on upper slopes and ridge crests of this low hill country, are the result of recurring fires, some of them set in an attempt to improve the forage.

Productive Capacity of Forest Land

One phase of the survey was a classification of the productive capacity of the county's forest land. In this classification, results of which are given in table 4, 203,000 acres, or 92 percent of the total forest land, was rated on capacity to grow conifers, being rated almost wholly on capacity to grow Douglas-fir. Roughly half of the conifer acreage was in the two better site classes, I and II. There is a comparatively small acreage of site class IV and none of class V, the two least productive classes.

Areas now stocked with hardwood types were classified only as hardwood site.

Table 4. - Land areas, forest land areas, and commercial conifer areas, by site quality class[1/]
Data corrected to October 1, 1942

Kind of forest land and site quality class	Total area		Area in forest land	Area in commercial conifers
	Acres	Percent	Percent	Percent
Commercial conifer				
Douglas-fir				
Class I	3,285	0.7	1.5	1.6
Class II	92,710	20.2	41.9	45.6
Class III	98,470	21.5	44.4	48.4
Class IV	8,150	1.8	3.6	4.0
Total	202,615	44.2	91.4	99.6
Spruce-hemlock				
Class III	670	0.2	0.3	0.3
Class IV	110		0.1	0.1
Total	780	0.2	0.4	0.4
Total commercial conifer	203,395	44.4	91.8	100.0
Noncommercial	2,765	0.6	1.3	
Hardwood	15,365	3.3	6.9	
Total other	18,130	3.9	8.2	
All forest land	221,525	48.3	100.0	
Nonforest land	236,730	51.7		
Grand total	458,255	100.0		

1/ The "site quality" of a forest area is its relative productive capacity, determined by climate, soil, topographic, and other factors. The index of site quality is the average height of the dominant stand at the age of 100 years. Five site quality classes are recognized for both Douglas-fir and spruce-hemlock types, class I being the highest. In the survey the Douglas-fir classification was used for Douglas-fir types; the spruce-hemlock classification was used for western hemlock, fir-mountain hemlock, and grand fir types.

Merchantable Volume

Study of the timber volume statistics given in table 5 discloses in particular the immature character of the present stands in Yamhill County. Of the total volume, 1,387 million board feet, 1,086 million feet or nearly four-fifths is in immature Douglas-fir trees. Roughly two-thirds of this immature timber is in large second-growth trees which range from 22 to 40 inches d.b.h. but average about 26 inches; the other one-third is in trees 16 to 20 inches d.b.h. This class of material, generally spoken of as red fir in the lumber industry, is sound but coarse grained, suitable chiefly for dimension lumber, ties, or piling.

The remaining old-growth fir volume, 234 million feet, is generally a fine-grained, high-quality timber, a considerable percentage of which is of peeler grade.

The hardwood volume, totaling 39 million feet, is in five species, a large part of which is in understory trees in the conifer stands.

Forest Ownership

An intermingled pattern of ownership prevails over most of the forest zone. Blocks of practically solid ownership of any appreciable acreage are limited to the federally owned Siuslaw National Forest in the southwestern portion of the county, one fairly large private tract in the same vicinity, and a municipally owned watershed. Elsewhere in the zone small areas in private, federal, and county ownership are the rule, at times in checkerboard pattern.

Private holdings include 69 percent of the total forest land acreage, 66 percent of the area of immature conifer stands, 69 percent of the deforested acreage, and 63 percent of the remaining saw-timber volume.

The federal government in the Siuslaw National Forest, revested grant lands, and the public domain owns a total of 50,000 acres of forest land, roughly two-thirds of which is stocked with immature conifer stands. About 29 percent of the saw-timber volume is federally owned. Forest land owned currently by the county totals 12,000 acres of which about 7,000 acres is stocked forest land and 5,000 acres is deforested. In a municipal watershed the city of McMinnville has 6,000 acres practically all covered with immature stands.

The State of Oregon owns only a very small acreage of forest land in the county, and Indian lands also total only a few hundred acres.

Forest Utilization

Utilization of the forests of Yamhill County has been quite closely associated with the development of the agricultural lands. One of the first districts in the state to be settled, the forests on the low-lying valley lands and foothills were cut by the earlier settlers for building material, fencing, and fuelwood. Later as the lumbering industry developed in the county, much of the labor was supplied by part-time farmers.

Table 5. - Volume of timber by species and ownership class
Data corrected to October 1, 1942

Trees 16" and more d.b.h.[1/]
Thousands of board feet, log scale, Scribner rule

Species	Private	State[2/] available	County	Municipal	Indian	Federal, available			Total
						Revested land grant	Public domain	National forest	
Douglas-fir									
Large old growth	76,116		6,177	2,281	295	47,481		52,618	184,968
Small old growth	15,202		750			33,178			49,130
Large second growth	513,441	754	30,833	17,641	3,044	129,451		19,205	714,369
Small second growth	219,870	784	17,590	25,852	1,618	64,005	1,435	35,740	366,894
Sitka spruce, large	145							450	595
Western hemlock									
Large	3,841		265	102		849		2,723	7,780
Small	2,868		30	600		1,699		3	5,200
Western redcedar	2,423		154	274		2,657			5,508
Grand fir	9,849		206	90		3,822		16	13,983
Red alder	2,442		124	25	5	229		4,709	7,534
Bigleaf maple	10,530		464	150	33	1,302		225	12,704
Northern black cottonwood	4,235								4,235
Oregon ash	8,635								8,635
Oregon white oak	5,755								5,755
Total	875,352	1,538	56,593	47,015	4,995	284,673	1,435	115,689	1,387,290

1/ Trees of hardwood species taken from 12" and more d.b.h.
2/ Includes 640 thousand board feet of Douglas-fir in a State park, reserved from cutting.

Lacking large bodies of old-growth timber, the county never attracted really large-scale operations and generally became a district of small logging and sawmilling operations. Also a considerable portion of the sawlogs were shipped out of the county to the near-by Portland mills.

Although records of sawlog production are not available for the years prior to 1925, it appears certain that the greatest activity of the logging industry here was in the 1920's. The largest reported production of sawlogs was in 1928 when 136 million board feet was cut. The average yearly output for the 5-year period 1925-29 was not far below this figure. In 1931, however, the cut dropped to 19 million feet. During the latter half of the 1930's, it was fairly stable averaging about 43 million feet annually. Under the impetus of the national defense program and the war emergency, production reached 110 million feet in 1941.

In 1929 there were some 36 sawmills in the county and their total production of lumber was about 94 million board feet. The average capacity was about 25 thousand board feet per 8-hour day; only one had a capacity of more than 60 thousand feet. In 1942 a total of 29 mills operated, and their production, according to preliminary statistics compiled by the Bureau of the Census, was about 170 million feet. All but 3 of the mills had an 8-hour capacity of less than 50 thousand feet; one was above 100 thousand feet.

Several of the larger mills get all or part of their logs from outside the county, a practice made feasible by the widespread transportation of logs by truck.

Other forest products industries in the county include a large plywood plant at Willamina and a pulp plant at Newberg. The plywood plant, of an annual capacity of 80 million square feet of 3/8-inch, 3-ply veneer, gets its logs from neighboring Lincoln and Polk counties. The pulp plant, with a 24-hour capacity of 80 tons of sulphite pulp, obtains raw material from neighboring Willamette Valley and Oregon coast counties.

Combined, the forest industries rank next to agriculture in importance. According to Bureau of the Census statistics for 1940, there were 1,345 workers directly employed in logging, sawmilling, pulp plants, and forestry, about 15 percent of the county's total workers; many others were indirectly involved.

Growth

An important phase of the survey of the county was a determination of the rate at which the forests were growing. In compiling growth information, the forests were placed in two categories--nongrowing stands and growing stands. The nongrowing group included the old-growth stands which cover approximately 4,000 acres and in which any volume increment is thought to be offset by mortality and decay. The growing group included the immature stands which cover 159,000 acres and all of which are under 150 years of age.

Since the volume lost through mortality and decay in these young stands is relatively small and the volume added is large, a net volume increment results. The net increment that results annually in the present stands is known as current annual growth. The productive capacity--site quality--of the forest land, the age of the stands, and the density of the trees in the stands are factors that determine the growth rate.

In all conifer trees 15.1 inches and larger d.b.h. in the immature stands the current annual growth was computed to be 59 million board feet; in trees 5.1 inches and larger d.b.h. the cubic-foot growth was computed to be 17 million cubic feet annually. The current annual growth of hardwoods was estimated at 865 thousand board feet, making the board-foot total in all stands approximately 60 million feet.

Another kind of growth calculation, potential annual growth, which is sort of an ultimate goal to be achieved through intensive forest practices, was compiled. If all of the forest land of the county were stocked with growing stands, it is estimated that the average annual growth would be 79 million board feet; potential cubic-foot growth is estimated at 24 million cubic feet.

Present and Future Aspects of Forest Situation

Currently the forest situation in Yamhill County may be said to have favorable prospects. Whether these prospects materialize depends on the extent to which the present stands and the idle forest land are placed under good management.

The present situation is partly disclosed by the following summary of certain significant type-area and timber-volume statistics which were obtained in the inventory of 1942. Also shown in this summary are the statistics as of 1933. Comparison of these two sets of statistics reveals the trend of depletion and replenishment that has prevailed during the last 10 years.

	1933	1942	Change
Forest land acreage			
Total	236 M acres	222 M acres	- 7%
Old-growth timber	15 M acres	4 M acres	- 73%
Large second-growth timber	54 M acres	49 M acres	- 9%
Small second-growth timber	72 M acres	86 M acres	+ 19%
Seedlings and saplings	45 M acres	24 M acres	- 47%
Deforested burns and cut-overs	18 M acres	40 M acres	+122%
Privately owned forest land	184 M acres	152 M acres	- 17%
Saw-timber volume			
All species	1,796 MM bd. ft.	1,387 MM bd. ft.	- 23%
Old-growth timber	392 MM bd. ft.	234 MM bd. ft.	- 40%
Large second-growth timber	878 MM bd. ft.	714 MM bd. ft.	- 19%
Small second-growth timber	421 MM bd. ft.	367 MM bd. ft.	- 13%
Privately owned timber	1,331 MM bd. ft.	875 MM bd. ft.	- 34%

Reduction in the forest land acreage resulted principally from a reclassification, in the reinventory, of some of the cut-over lands in the agricultural zone and does not wholly represent the acreage of forest land cleared for agriculture during the period.

As far as the old-growth stands are concerned a cut-out condition is nearly most of them will probably be cut during the present war emergency. As this class of timber is logged, the cut-over lands should restock readily, precluding recurring fires, since the tracts will be of limited extent and near a seed source.

The 9-percent decrease in area of large second growth (type 8) does not represent all of the cutting in these stands since about a fifth of the type's acreage has been selectively logged in the last few years. In this selection, the dominant and codominant trees were removed and the residual stand, while still of sufficient density to warrant continued classification as type 8, is composed of trees of relatively low vigor which will respond very slowly to release and will be subject to heavy wind throw. Comparison of saw-timber volume in the different size and age classes in 1933 and 1942 indicates that the large second-growth stands have furnished the greatest portion of the volume of sawlogs produced in the decade. This is especially true in the last two years, when sawlog production has increased more than two-fold over the average for the preceding 10-year period. While the cutting of these stands at this time contributes material vitally needed during the war emergency, it constitutes premature utilization since most of them are now at the period of greatest volume increment.

The increase of a fifth in the area of small second-growth stands is a result of the transition of sapling stands to pole stands. Although some of this class of timber is now being cut for piling, the acreage involved to date is not large. If this utilization is in the nature of a thinning rather than a heavy selection, the practice is good management.

The volume now being added annually by the immature stands through growth--60 million board feet--is about 76 percent of the potential growth rate--estimated at 79 million board feet--that could be obtained if all the forest land was stocked with growing stands under intensive management. This comparatively favorable condition is not the result of any planned management, other than organized fire protection for the last two decades or so, but is due to the immature character of the bulk of the forest stands and a relatively small acreage of idle land, either stocked with nongrowing stands or in a deforested status.

The current growth rate can be continued and possibly increased only through utilization practices that will insure the quick and satisfactory regeneration of cut-over lands and that will limit the premature harvesting of second-growth stands to improvement thinnings. Continued protection of the existing stands from fire and reforestation of the 40,000 acres of currently deforested land are also imperative. Such a forest program requires stable ownership. During the decade 1933-42, there was a reduction of 17 percent in the acreage of privately owned forest land in the

county. This resulted from the foreclosure of tax-delinquent lands, the establishment of a municipally owned watershed, and acquisition of submarginal lands by the federal government. This trend may not continue. A considerable acreage of the immature stands is now in small privately owned tracts throughout the forest zone. An opportunity exists for the blocking up of these tracts into larger units to be held as managed forests, an opportunity that may prove attractive to private companies and individuals.

Maintenance of a current annual growth rate of 60 million board feet would furnish raw material for a lumber industry of about the capacity that operated during the period 1935-38. Such an industry would have an important role in the county's economy.